Status on Local Muon Tracking and Error Matrix Propagation

- momentum resolution:

  $\rightarrow$ with different segment algorithms (LL, Combi)

  $\rightarrow$ on MC segments

- pull distributions:

  $\rightarrow$ on MC segments

- looking at some data

Momentum Resolution

- sample used: single muons: Pt from 5 to 100 GeV

- t52 or t53 (with new version of LL segment algorithm with vertex constraint)

    → with *LL* or *Combi* segment algorithm

    → fixed segment errors

    momentum resolution in the deviation plane:

    $$(q/P_{fit} - q/P_{MC}) \times P_{MC} \sim 35\%$$

    → roughly the same for A and BC layers

    → roughly the same with LL and Combi segment algorithms

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Segment Resolution

- drift angle resolution at A layer:

  → better resolution and shape using LL due to vertex constraint

- drift angle resolution at BC layer:

  → both algorithms show tails (wrong BC association?)

- phi angle:

  → better shape for LL

- position resolution:

  → better resolution for LL at A layer due to vertex constraint

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Results with MC segments

- with smeared MC segments:

    $\rightarrow$ angle: $\sigma = 0.001$ rad

    $\rightarrow$ position: $\sigma = 0.08$ cm

    > momentum resolution:
    >
    > $$(q/P_{fit} - q/P_{MC}) \times P_{MC} \sim 25\%$$

- errors:

    $\rightarrow$ pull in $1/p$: OK (phi dependence corrected)

    $\rightarrow$ pull in px, py, pz at A layer (after error propagation): OK

    $\rightarrow$ pull in position: to be worked on

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Conclusion

- local muon track:

  → reasonable resolution

  → we are able to find local tracks in data

- error matrix propagation:

  → still need good segment errors

  → look at the association with central tracks